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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,686	08/19/2003	Peter Deane	PAT 2138-2	2732
26123 7590 10/31/2007 BORDEN LADNER GERVAIS LLP Anne Kinsman WORLD EXCHANGE PLAZA 100 QUEEN STREET SUITE 1100 OTTAWA, ON K1P 1J9 CANADA			EXAMINER SINKANTARAKORN, PAWARIS	
			ART UNIT 2616	PAPER NUMBER
			NOTIFICATION DATE 10/31/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

Application No.

10/642,686

Applicant(s)

DEANE ET AL.

Examiner

Pao Sinkantarakorn

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-14 and 16-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-14 and 16-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. Claims 2-14 and 16-33 are currently pending in the application. Claims 1 and 15 have been canceled.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 2-8 and 16-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Scott (US 6,522,642).

**Regarding claims 2 and 16,** Scott discloses an apparatus for processing N number of input signals having a common frequency, the apparatus comprising:

at least N number of modulators for modulating N of the N number of input signals into N number of modulated signals (see column 10 lines 22-30, each signal is modulated with a different chip code by a different modulator);

a combiner for combining the modulated signals into an aggregate signal (see column 10 lines 32-33);

a demux element for decombining the aggregate signal into N number of constituent modulated signals (see column 10 lines 52-53);

Art Unit: 2616

at least N number of modulators for demodulating each of the N number of constituent modulated signals into N number of recovered signals (see column 6 lines 1-6 and column 10 lines 54-60, one signal is despread and correlated with the first spread spectrum signal by a correlator and the other signal is despread and correlated with the second spread spectrum signal by another correlator), each corresponding substantially identically to one of the N number of input signals (see column 10 lines 64-67);

wherein the demux element includes a splitter (see Fig 2 reference numeral 160), a delay line having one or more switches (see Fig 2 reference numeral 167 and 161), and a phase discriminator (see Fig 2 reference numeral 171);

**regarding claim 3**, a length of cabling is placed between the combiner and the splitter (see Fig 2 reference numeral 152);

**regarding claim 4**, a length of cabling spans at least a portion of an antenna structure (see Fig 2 reference numeral 151 and 152, the cable 152 is connected to the summer 151, which is considered part of the antenna structure);

**regarding claims 5 and 17**, further including a plurality of amplifiers each located such that the input signals pass through a respective one of the plurality of amplifiers prior to passing through the at least N number of modulators (see column 6 lines 45-51);

**regarding claims 6 and 18**, the input signals are forward link transmissions and the plurality of amplifiers are high power amplifiers (see column 6 lines 45-51);

**regarding claims 7 and 19**, the input signals are reverse link transmissions and the plurality of amplifiers are low power preamplifiers (see column 6 lines 45-51);

**regarding claims 8 and 20**, wherein the input signals are forward link transmissions and the apparatus further includes a single high power amplifier for amplifying the aggregate signal, the high power amplifier located between the combiner and the length of the cabling (see column 4 lines 33-41).

### ***Claim Rejections - 35 USC § 103***

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 2616

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 9, 10, 13, 21, 22, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott in view of Wilson et al. (US 6,011,513).

**Regarding claims 9, 10, 13, 21, 22, and 25**, Scott discloses an apparatus, wherein both the modulators and the demodulators utilize an orthogonal methodology includes Walsh codes (see column 12 lines 40-44).

However, Scott does not disclose that the phrase discriminator is a modified Wilkinson combiner. The invention of Wilson et al. from the same or similar fields of endeavor disclose a Wilkinson combiner to combine the in-phase and quadrature components (see column 39-42).

Thus, it would have been obvious to the person of ordinary skill in the art to implement a Wilkinson combiner as taught by Wilson et al. into the receiver apparatus of Scott.

The motivation for implementing a Wilkinson combiner is that it increases the efficiency of the demultiplexer.

8. Claims 11, 12, 14, 23, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott in view of Skones et al. (US 6,760,342).

**Regarding claims 11, 12, 14, 23, 24, and 26**, Scott discloses an apparatus, wherein both the modulators and the demodulators utilize an orthogonal methodology includes Walsh codes (see column 12 lines 40-44).

However, Scott does not disclose that the phrase discriminator is a 90-degree hybrid. The invention of Skones et al. from the same or similar fields of endeavor disclose a 90-degree hybrid coupler functioning to discriminate between 0-degree phase and 90-degree phase of input signals (see column 7 lines 11-16).

Thus, it would have been obvious to the person of ordinary skill in the art to implement a 90-degree hybrid coupler as taught by Skones et al. into the receiver apparatus of Scott.

The motivation for implementing a 90-degree hybrid coupler is that it increases the efficiency of the demultiplexer.

9. Claims 27, 29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall in view of Scott.

**Regarding claim 27**, Marshall discloses an apparatus for processing N number of modulated input signals having a common frequency, the apparatus comprising:

A demux element (see Fig 4, column 4 lines 60-68, and column 5 lines 1-15, an antenna receives a multiplexed signal from the transmitter and splits the signal into two signals and transmit the signal to mixers 42 and 44) for demultiplexing an amplified aggregate signal consisting of modulated forms of the input signals (see column 4 lines

Art Unit: 2616

34-37 and 46-51, the modulated signals are transmitted to amplifiers in the transmission process), which comprises:

a splitter for splitting the aggregate signal into N number of signal components each corresponding to one modulated input signal (see Fig 4, column 4 lines 60-68, an antenna receives a modulated signal from the transmitter and splits the signal into two signals and transmit the signal to mixers 42 and 44);

a delay line having one or more switches (see Fig 4 reference numerals 42 and 44), the delay line for filtering outputs of the splitter into odd and even groups of frequencies of the N number of signal components (see column 4 lines 63-68 and column 5 lines 1-5, the passband of the filters are set to pass only the wanted sub-channels b and b', b and b' are considered odd and even frequencies); and

a phase discriminator for grouping the odd and even frequencies (see column 5 lines 5-8, the output of the filters are combined in a difference amplifier and sum amplifier to obtain b and b'); and N number of demodulators, each demodulator for demodulating a corresponding one of the odd and even frequencies (see column 5 lines 8-12).

However, Marshall does not disclose the demux element including a high power Walsh code discriminator. The invention of Scott from the same or similar fields of endeavor disclose Walsh function discriminator (see figure 4 reference numerals 194).

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement a high power Walsh code discriminator as taught by Scott into the receiver apparatus of Marshall.

Art Unit: 2616

The motivation for implementing a high power Walsh code discriminator is that it increases the efficiency of the demultiplexer by enabling the demultiplexer to generate distinct spread spectrum signals.

**regarding claims 29 and 31**, the splitter and the switches are arranged to form a comb filter (see column 4 lines 60-66).

10. Claim 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall in view of Wilson et al.

**Regarding claim 32**, Marshall discloses an apparatus, wherein both the modulators and the demodulators utilize an orthogonal methodology (see column 5 lines 3-4).

However, Marshall does not disclose that the phrase discriminator is a modified Wilkinson combiner. The invention of Wilson et al. from the same or similar fields of endeavor disclose a Wilkinson combiner to combine the in-phase and quadrature components (see column 39-42).

Thus, it would have been obvious to the person of ordinary skill in the art to implement a Wilkinson combiner as taught by Wilson et al. into the receiver apparatus of Marshall.

The motivation for implementing a Wilkinson combiner is that it increases the efficiency of the demultiplexer.

Art Unit: 2616

11. Claims 30, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall in view of Skones et al.

**Regarding claims 30, 31, and 33,** Marshall discloses an apparatus, wherein both the modulators and the demodulators utilize an orthogonal methodology (see column 5 lines 3-4).

However, Marshall does not disclose that the phrase discriminator is a 90-degree hybrid. The invention of Wilson et al. from the same or similar fields of endeavor disclose a 90-degree hybrid coupler functioning to discriminate between 0-degree phase and 90-degree phase of input signals (see column 7 lines 11-16).

Thus, it would have been obvious to the person of ordinary skill in the art to implement a 90-degree hybrid as taught by Wilson et al. into the receiver apparatus of Marshall.

The motivation for implementing a 90-degree hybrid is that it increases the efficiency of the demultiplexer.

### ***Response to Arguments***

12. Applicant's arguments filed 8/15/2007 have been fully considered but they are not persuasive.

On page 2 of the remarks, the applicant submits that Scott does not teach "a delay line having one or more switches, and a phase discriminator." The examiner respectfully disagrees. Scott discloses a mixer performing the complementary arithmetic operations (see column 4 lines 55-57). When a mixer performs an arithmetic operation,

Art Unit: 2616

at least a slight delay is added. Scott also discloses a filter 171, wherein the filter remove noise associated with transmission over the cable AND converts signals to baseband signals, and then the outputs from the filters are provided to spread spectrum correlators for correlating and despreading the filtered signals (see column 5 lines 1-7). The structures of a delay line having one or more switches and a phase discriminator have not been defined in the claim, therefore, the examiner interprets the claim limitations as broadly as the claim limitations allow. The examiner encourages the applicant to amend the claim to better reflect what applicant intends to claim as the invention. Also on page 2 of the remarks, the applicant submits that Scott does not teach "forward link transmission or high powered amplifiers." The examiner respectfully disagrees. Scott discloses diversity antenna receiving signals and the input signal is coupled to an amplifier circuit (see column 3 lines 48-50 and column 6 lines 45-51). The structure of high power amplifiers is not defined how high the power of the amplifiers is, therefore, the amplifier circuit of Scott reads on the high power amplifiers of claim 6.

On page 3 of the remarks, the applicant submits that a person skilled in the art would not be motivated to substitute the filter as described in Scott with a modified Wilkinson combiner. The examiner respectfully disagrees. The motivation for implementing a modified Wilkinson combiner is that it increases the efficiency of the demultiplexer because a modified Wilkinson combiner enables one to improve the small signal and large signal performance.

***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

14. Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure

Art Unit: 2616

relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pao Sinkantarakorn whose telephone number is 571-270-1424. The examiner can normally be reached on Monday-Thursday 9:00am-3:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS



CHIRAG G. SHAH  
PRIMARY PATENT EXAMINER